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## DISPOSABLE DIPAPER

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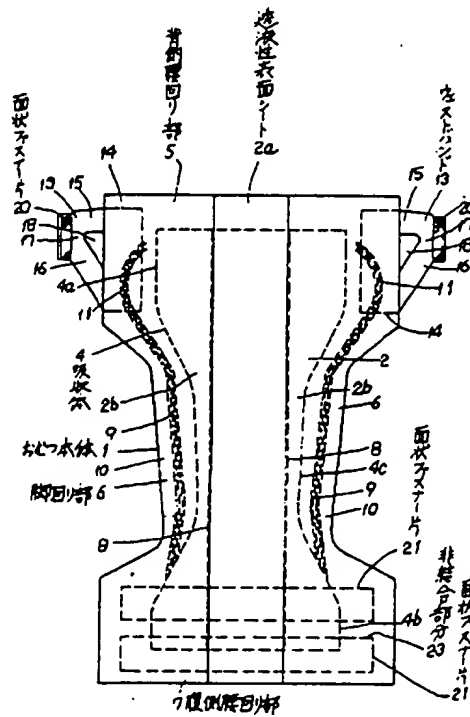
### Abstract

#### Problem

Both ends of the back side waist part (5) of a diaper main body (1) can be separated easily from both ends of the stomach side waist part (7).

#### Means to solve

Diaper main body (1) is formed with back side waist part (5), both side leg parts (6), and stomach side waist part (7) by arranging absorber (4) between permeable top sheet (2a) and impermeable bottom sheet (3). Planar fasteners (20) are provided on both ends of back side waist part (5) or on the waist band (13) provided on both ends of back side waist part (5) of diaper main body (1). Planar fasteners (21), which can be bonded in a



Key: 1 Diaper main body  
2a Permeable top part  
4 Absorber  
5 Back side waist part  
6 Leg part  
7 Stomach side waist part  
13 Waist band,  
20 Planar fastener  
21 Planar fastener  
23 Non-coupling part

### Claims

1. A disposable diaper characterized by the fact that a diaper main body having a back side waist part, both side leg parts, and a stomach side waist part is formed by arranging an absorber between a permeable top sheet and an impermeable bottom sheet, planar fastener pieces are provided on both ends of said back side waist part of said diaper main body, two planar fasteners, which can be bonded in a freely detachable manner to both ends of said back side waist part or to planar fasteners on waist bands provided on the stomach side waist part of said diaper main body, and a portion, which cannot be bonded to planar fasteners provided on both ends of said back side waist part or on the waist band, is formed between said two planar fasteners provided on the stomach side waist part.

2. A disposable diaper characterized by the fact that a diaper main body having a back side waist part, both side leg parts, and a stomach side waist part is formed by arranging an absorber between a permeable top sheet and an impermeable bottom

sheet, planar fasteners are provided on the waist band at both ends of said back side waist part of said diaper main body, two planar fasteners which can be bonded in a freely detachable manner to both ends of said back side waist part onto planar fasteners set on waist band, are provided on the stomach side waist part of said diaper main body, and a portion, which cannot be bonded to the planar fasteners provided on both ends of said back side waist part, is formed between said two planar fasteners provided on the stomach side waist part.

3. A disposable diaper according to Claim 1 or 2 characterized by the fact that the two planar fasteners provided on the stomach side waist part of the diaper main body are set parallel to each other forming a portion which cannot be bonded with the first planar fasteners provided on both ends of the back side waist part.

#### Detailed explanation of the invention

[0001]

#### Industrial application field

The present invention relates to a disposable diaper used by assembling into a panty shape and fastening around the waist for wear.

[0002]

Prior art

Conventionally, as this type of disposable diaper, a structure, which has fasteners provided on both ends of the back side waist part of a diaper main body with an absorbent panel interposed between a permeable top sheet and an impermeable bottom sheet, where these fasteners are adhered with an adhesive to both ends of the stomach side waist part to fasten the waist part, was used as noted in, for example, Japanese Kokai Utility Model No. Hei 6[1994]-5615.

[0003]

In the structure noted in this Japanese Kokai Utility Model No. Hei 6[1994]-5615, there is a problem when removing the disposable diaper that the fasteners do not separate easily.

[0004]

Therefore, a structure which provided planar fasteners on the back side waist part or both ends of the back side waist part and are bonded with two fasteners provided on both ends of the stomach side waist part, instead of the structure of adhering fasteners, is known.

[0005]

Problems to be solved by the invention

In said structure of bond planar fasteners provided on the back side waist part or both ends of the back side waist part of the diaper main body to the two fasteners provided on the stomach side waist part, the fastener or both ends of the back side waist part cannot be separated easily from the stomach side waist part; a tab part has to be provided on the fastener or both ends of the back side waist part, and if the tab part is made large, in addition to the appearance becoming unfavorable, there is an inconvenience of the tab part separating by becoming caught on the apparel, etc., and being pulled, and also, there is a problem that the tab part is difficult to hold if the tab part is made small and the separation becomes difficult.

[0006]

In a structure which provided several fasteners attached to the back side waist part or several locations on both ends of the back side waist part of a diaper main body, each piece has to be peeled off during the separation, which is troublesome and time consuming; moreover, there is a problem that they are difficult to peel off while visually verifying the correct position.

[0007]

The present invention was made taking said problems into consideration and provides a disposable diaper where both ends of the back side waist part of a diaper main body can be separated easily from the stomach side waist part.

[0008]

Means to solve the problems

The disposable diaper of the invention noted in Claim 1 is that in which a diaper main body having a back side waist part, both side leg parts, and a stomach side waist part is formed by arranging an absorber between a permeable top sheet and an impermeable bottom sheet; planar fasteners are provided on both ends of said back side waist part of said diaper main body, a second [set of] planar fasteners, to which the first [set of] planar fasteners can be bonded in a freely detachable manner, are provided on the stomach side waist part of said diaper main body, and a portion which cannot be bonded to the first [set of] planar fasteners provided on both ends of said back side waist part is formed between the two planar fasteners provided on the stomach side waist part.

[0009]

The diaper main body can be worn easily in a panty shape by bonding the first planar fasteners provided on both ends of the back side waist part of the diaper main body to the second planar fasteners provided on the stomach side waist part.

[0010]

When removing the diaper main body, the planar fasteners separate easily and both ends of the back side waist part can be removed from the stomach side waist part by inserting the finger in the nonbonded portion formed in the bonded portion of the first planar fasteners provided on both ends of the back side waist part and the second planar fasteners provided on the stomach side waist part and pulling both ends of the back side waist part.

[0011]

The disposable diaper of the invention noted in Claim 2 is that in which a diaper main body having a back side waist part, both side leg parts, and a stomach side waist part is formed by arranging an absorber between a permeable top sheet and an impermeable bottom sheet; a first [set of] planar fasteners are provided on the waist band at both ends of said back side waist part of said diaper main body, the second [set of] planar fasteners, to which the first planar fasteners provided on both

ends of said back side waist part are bonded in a freely detachable manner, are provided on the stomach side waist part of said diaper main body, and a nonbonded portion was formed in the bonded portion of the first planar fasteners provided on both ends of said back side waist part and the second planar fasteners provided on the stomach side waist part.

[0012]

By bonding the first planar fasteners of the waist band provided on both ends of the back side waist part of the diaper main body with the second planar fasteners on the stomach side waist part, the diaper main body can be worn easily in a panty shape.

[0013]

When removing the diaper main body, the planar fasteners can be separated easily and both ends of the back side waist part can be removed from the stomach side waist part by inserting a finger in the nonbonded portion formed in the bonded portion of the first planar fasteners provided on the waist band at both ends of the back side waist part and the second planar fasteners provided to the stomach side waist part and pulling the waist band of the back side waist part.

[0014]

The disposable diaper of the invention noted in Claim 3 is that in which the second planar fasteners provided on the stomach side waist part of the diaper main body are arranged parallel to each other to form a nonbonded portion with the first planar fasteners provided on both ends of the back side waist part in the disposal diaper noted in Claim 1 or 2.

[0015]

When removing the diaper main body, the planar fasteners separate easily and both ends of the back side waist part can be removed from the stomach side waist part by inserting a finger in the nonbonded portion formed between the first fasteners attached to the back side waist part or the waist band provided on the back side waist part and several second planar fasteners attached to the stomach side waist part and pulling the back side waist part or the waist band. In this case, it is easy to detect the nonbonded portion between the parallel second planar fasteners and the planar fasteners are easily separated.

[0016]

Application modes of the invention

Next, the constitution of an application mode of the disposable diaper in the present invention will be explained by referring to Figures 1 and 2.

[0017]

In Figures 1 and 2, (1) is the diaper main body; this diaper main body (1) is arranged with absorber (4) between top sheet (2) and bottom sheet (3); back side waist part (5) is formed on one end, both side leg parts (6) in the middle part, and stomach side waist part (7) on the other end.

[0018]

Said top sheet (2) is formed from [liquid-]impermeable top sheet (2a) such as synthetic fiber, etc., which transmits liquid and impermeable top sheet (2b) such as polyethylene resin fiber, etc., which is arranged at both sides of said permeable top sheet (2a) and prevents leakage of the liquid. Both end parts at both side edges of this permeable top sheet (2a) are bonded respectively to said bottom sheet (3) according to adhesion or fusion. Also, both end parts and the outside edge of said impermeable top sheet (2b) on both sides are bonded respectively to both end parts and the outside edge of said bottom sheet (3) according to adhesion or fusion, the inside edges of said impermeable top sheet (2b) on both sides are freed from both side parts of said permeable top sheet (2a), and this impermeable top

sheet (2b) on both sides is formed into a bag shape with the inside edge opened. Then, expandable thread-shaped part (8[sic; 9]) such as rubber is adhered to the inside edge of said impermeable top sheet (2b) except both end parts.

[0019]

Said bottom sheet (3) is formed from an impermeable material such as polyethylene resin, etc.

[0020]

Furthermore, said absorber (4) is formed in a shape having wide parts (4a), (4b) which form the part arranged in said back side waist part (5) and said stomach side waist part (7), to be wide in the bilateral direction, and a narrow part (4c) which forms the part arranged in said both side leg parts (6) using an absorbent material which absorbs liquid permeated from said permeable top sheet (2a). This absorber (4) is arranged between said top sheets (2a), (2b) and bottom sheet (3) and is fixed to said bottom sheet (3) according to adhesion or fusion.

[0021]

Said back side waist part (5) and said stomach side waist part (7) are formed to be wide in the bilateral direction and are formed in a length capable of being wrapped around the waist with

said back side waist part (5) and said stomach side waist part (7).

[0022]

The leg gather parts (10) are respectively formed in both side leg parts (6) with several thread-shaped parts (9) such as rubber, etc., which are attached along the respective outer edge part; one end of this thread-shaped part (9) extends towards both ends of said back side waist part (5), and the waist gather parts (12) are formed at both ends of back side waist part (5) with extended portion (11) of said thread-shaped part (9).

[0023]

The waist band (13) is attached to both ends of back side waist part (5) of said bottom sheet (3) by being positioned on extended portion (11) of said thread-shaped part (9). In both of these waist bands (13), first stretching part (15) in the horizontal direction which stretches said back side waist part (5) in the direction around the waist from attachment part (14) along both ends of back side waist part (5) and second stretching part (16) which stretches both side leg parts (6) in the direction around the leg are formed continuously into an approximately triangular shape, an anchoring part (17) connected to the outer end of said first stretching part (15) and second stretching part (16) is formed, and a triangular space (18) is

formed between said attachment part (14), first stretching part (15), and second stretching part (16).

[0024]

Then the first bonding [set of] planar fasteners (20), provided with plural hook-shaped bonding materials which become the male part of the planar fastener, are attached to the extreme end of anchoring part (17) in said waist band (13).

[0025]

Two planar fasteners (21, 21), which become the female part of the planar fastener such as tricot, loop tricot, or special adhesion nonwoven fabric bonded to said first planar fasteners (20), are attached parallel to stomach side waist part (7) of bottom sheet (3) of said diaper main body (1) in the width direction composing the bilateral direction and forms nonbonded part (23) with the first [set of] planar fasteners (20) which attach these second planar fasteners (21, 21) to said waist band (13).

[0026]

Next, the function of said application mode will be explained.

[0027]

When the diaper is worn, along with wrapping the top sheet (2) side of diaper main body (1) around the back side waist of the wearer, stomach side waist part (7) is wrapped around the stomach side waist of the wearer. Next, when waist bands (13) at both ends of back side waist part (5) are stretched toward the direction around the waist, the tensile stress of both waist bands (13) is dispersed in first stretching part (15) and second stretching part (16), and the waist gather parts (12) at both ends of back side waist part (5) are elongated sufficiently at the first stretching part (15) along with leg gather parts (10) of both side leg parts (6) which are elongated sufficiently at second stretching part (16).

[0028]

Then, by anchoring planar fastener pieces (20) of anchoring part (17) in both waist bands (13) by bonding them to planar fasteners (21) of stomach side waist part (7), [the diaper] is arranged in the form of a panty so that back side waist part (5), stomach side waist part (7), and both side leg parts (6) make close contact around the waist and around both legs of the wearer.

[0029]

Then, liquid is absorbed in absorber (4) from permeable top sheet (2a) and leakage is prevented by impermeable bottom sheet (3) which covers the bottom side of said absorber (4).

[0030]

The liquid does not leak from around the waist and around both legs due to the bag shape part according to impermeable top sheet (2b) opened at both ends of permeable top sheet (2a) and due to [the parts] around the waist and around both legs of the wearer being closed in an adhered state according to waist gather parts (12) and leg gather parts (10).

[0031]

When waist bands (13) at both ends of back side waist part (5) are stretched during wear, waist gather parts (12) at both ends of back side waist part (5) are elongated sufficiently but both angled ends positioned at back side waist part (5) of absorber (4) are formed by attaching and combining as one body to waist gather part (12) on both sides, so even if waist gather parts (12) at both ends of back side waist part (5) are elongated sufficiently, the top part of back side waist part (5) being bent towards the top sheet (2a, 2b) side on the wearer side is prevented by both angled ends [being] positioned at back side waist part (5) of said absorber (4). The bottom sheet (3) of back

side waist part (5) does not contact the waist of the wearer and prevents top sheets (2a, 2b) from causing rashes or becoming bound at the waist part of the wearer.

[0032]

When removing the diaper, first planar fasteners (20) are easily separated from second planar fasteners (21) and both ends of back side waist part (5) can be removed from stomach side waist part (7) by inserting a finger in nonbonded part (23) formed between two parallel second planar fasteners (21, 21) on stomach side waist part (7) bonded to the first planar fasteners (20) provided on waist band (13) at both ends of back side waist part (5) and pulling the waist band (13). At this time, separation operation of planar fasteners becomes easy because the nonbonded portion (23) between two parallel second planar fasteners (21) is easily detected.

[0033]

Next, another application mode of the disposable diaper will be explained based on Figure 3. The same compositional parts as the aforementioned application mode are indicated with the same symbols and explanation will be omitted.

[0034]

In the application mode shown in Figure 1, it was composed by attaching waist bands (13) to both ends of back side waist part (5) on bottom sheet (3) of diaper main body (1) and attaching first planar fasteners (20) which project several hook-shape bonding members composing the male part of the planar fastener to the extreme end of anchoring part (17) of said waist band (13), but in this application mode, it is formed by attaching first planar fasteners (20) which project several hook-shaped bonding members composing the male part of the planar fastener to both ends of back side waist part (5) in bottom sheet (3) of diaper main body (1) without attaching to the waist bands (13). The constitution of diaper main body (1) is the same constitution as the aforementioned application mode.

[0035]

By bonding the first planar fasteners (20) provided on to both ends of back side waist part (5) in diaper main body (1) to second planar fasteners (21) provided on stomach side waist part (7), the diaper main body (1) can be arranged in a panty shape.

[0036]

When removing diaper main body (1), the planar fasteners separate easily and the two ends of back side waist part (5) can be removed from stomach side waist part (7) by inserting a finger

in nonbonded part (23) formed at the bonded part of first planar fasteners (20) provided on both ends of back side waist part (5) and second planar fasteners (21) provided on stomach side waist part (7) and pulling both ends of back side waist part (5).

[0037]

Each of the aforementioned application modes was designed to attach two second planar fasteners (21) which are provided on stomach side waist part (7), but it is possible to make [the two] second planar fastener (21) into a single unit, make the width of this second planar fastener (21) narrower than the width of first planar fastener (20), make the top side or the bottom side or both sides of second planar fastener (21) into the nonbonded part, and pull both ends of back side waist part (5) by inserting a finger in this nonbonded part.

[0038]

Furthermore, in the aforementioned application mode, first planar fastener (20) projecting several hook-shaped bonding members composing the male part of the planar fastener was attached to waist band (13), or back side waist part (5) and second planar fastener (21) composing the female part of the planar fastener such as tricot, loop tricot, or special adhesive nonwoven fabric bonded to first planar fastener (20) was attached to stomach side waist part (7), but it is possible to attach first planar fastener (20) projecting several hook-shaped bonding

members composing the male part of the planar fastener to stomach side waist part (7) and to attach second planar fastener (21) composing the female part of the planar fastener such as tricot, loop tricot, or special adhesive nonwoven fabric bonded to first planar fastener (20) to back side waist part (5).

[0039]

In the aforementioned application mode, two planar fasteners (21) were provided parallel to stomach side waist part (7) of diaper main body (1) but it is possible to provide several pieces, for example, three pieces in a parallel as shown in Figure 4.

[0040]

It is possible to provide one or several pieces out of several planar fasteners (21) which are provided on stomach side waist part (7) of diaper main body (1) in a curve shape as shown in Figure 5.

[0041]

Furthermore, it is possible to divide several second planar fasteners (21) provided on stomach side waist part (7) of diaper main body (1) in several places in the longitudinal direction as shown in Figure 6.

[0042]

#### Application example

First planar fasteners (20) attached to waist bands (13) or back side waist part (5) are formed so that the width dimension in the vertical direction is 20-200 mm, preferably 70-150 mm and the length in the bilateral direction is 5-30 mm, preferably 10-20 mm. Also, second planar fasteners (21) attached to stomach side waist part (7) are formed so that the width dimension in the vertical direction is 5-80 mm, preferably 20-50 mm and the length in the bilateral direction is greater than 100 mm, preferably 30-50 mm [sic].

[0043]

#### Effect of the invention

According to the invention noted in Claim 1, the diaper main body can be arranged simply in a panty shape by bonding the first planar fasteners provided on both ends of the back side waist part of the diaper main body to the second planar fasteners provided on the stomach side waist part. When removing the diaper main body, the planar fasteners separate easily and both ends of the back side waist part can be removed from the stomach side waist part by inserting a finger in the nonbonded part formed in the bonded part of the first planar fasteners provided on the both ends of the back side waist part and the second planar

fasteners provided on the stomach side waist part and pulling both ends of the back side waist part.

[0044]

According to the invention noted in Claim 2, the diaper main body can be arranged easily in a panty shape by bonding the first planar fasteners on the waist band provided on both ends of the back side waist part of the diaper main body to the second planar fasteners on the stomach side waist part. When removing the diaper main body, the planar fasteners separate easily and both ends of the back side waist part can be removed from the stomach side waist part by inserting a finger in the nonbonded part formed in the bonded part of the first planar fasteners provided on the waist band at both ends of the back side waist part and the second planar fasteners provided on the stomach side waist part and pulling the waist band in the back side waist part.

[0045]

According to the invention noted in Claim 3, when removing the diaper main body, the planar fasteners separate easily and both ends of the back side waist part can be removed from the stomach side waist part by inserting a finger in the nonbonded part formed between several second fasteners attached to the stomach side waist part and the first fasteners attached to the back side waist part or the waist band provided on the back side waist part and pulling the waist band or the back side waist

part; separation of the planar fasteners is accomplished easily by the nonbonded part between the two parallel second planar fasteners being detected easily.

#### Brief description of the figures

Figure 1 is a developmental figure of a disposable diaper showing an application mode of the present invention.

Figure 2 is a perspective view showing a state when said disposable diaper is worn.

Figure 3 is a developmental figure of a disposable diaper showing another application mode.

Figure 4 is a frontal view of the planar fastener provided on the stomach side waist part showing another application mode.

Figure 5 is a frontal view of the planar fastener provided on the stomach side waist part showing another application mode.

Figure 6 is a frontal view of the planar fastener provided on the stomach side waist part showing another application mode.

#### Explanation of symbols

(1)...Diaper main body, (2a)...Permeable top sheet,  
(3)...Impermeable bottom sheet, (4)...Absorber, (5)...Back side  
waist part, (6)...Leg part, (7)...Stomach side waist part,  
(13)...Waist band, (20)...First planar fastener, (21)...Second  
planar fastener, (23)...Nonbonded part

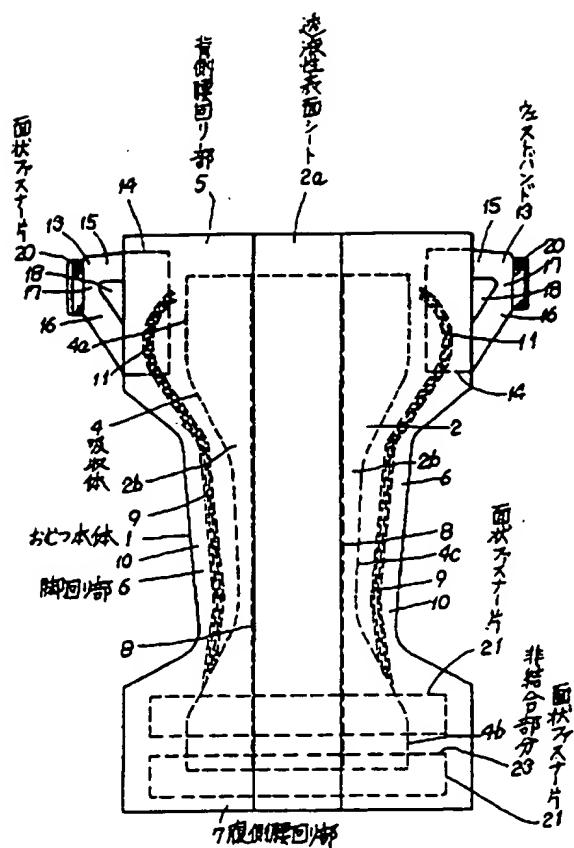


Figure 1

- Key:
- 1 Diaper main body
  - 2a Permeable top part
  - 4 Absorber
  - 5 Back side waist part
  - 6 Leg part
  - 7 Stomach side waist part
  - 13 Waist band
  - 20 Planar fastener



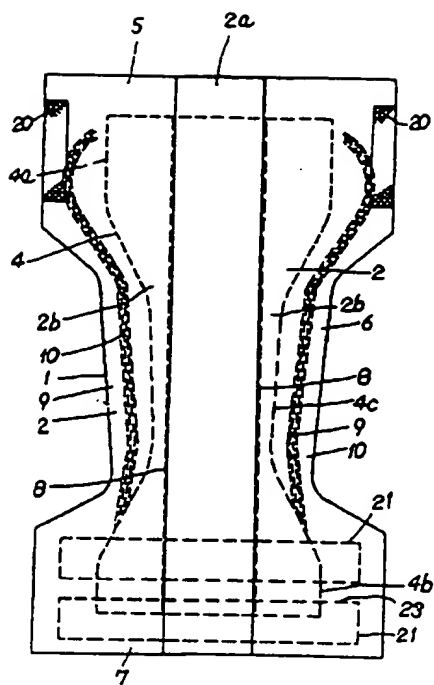


Figure 3

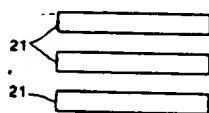


Figure 4

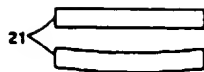


Figure 5

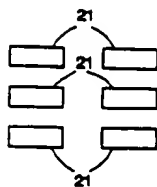


Figure 6